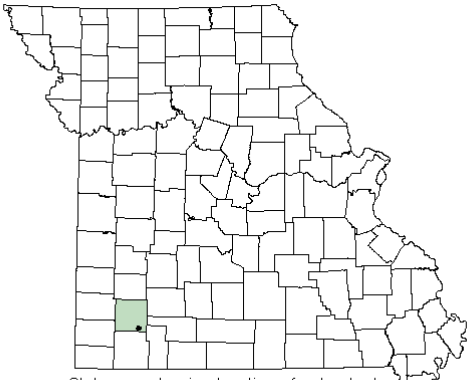
Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Chat Creek (Douger Branch)

Waterbody Segment at a Glance:

County: Lawrence
Nearby Cities: Aurora
Length of impairment: 2.0 miles
Pollutant: Zinc
Source: Aurora Abandoned Mine Land


State map showing location of watershed

TMDL Priority Ranking: Low

Description of the Problem

Beneficial uses of Chat Creek (Douger Branch)

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life and Human Health associated with Fish Consumption

Use that is impaired

- Protection of Warm Water Aquatic Life

Standards that apply

- Missouri's Water Quality Standards may be found in 10 CSR 20-7.031 Table A. The applicable standard for zinc is340 µg/L (micrograms per liter or parts per billion) as dissolved metal.

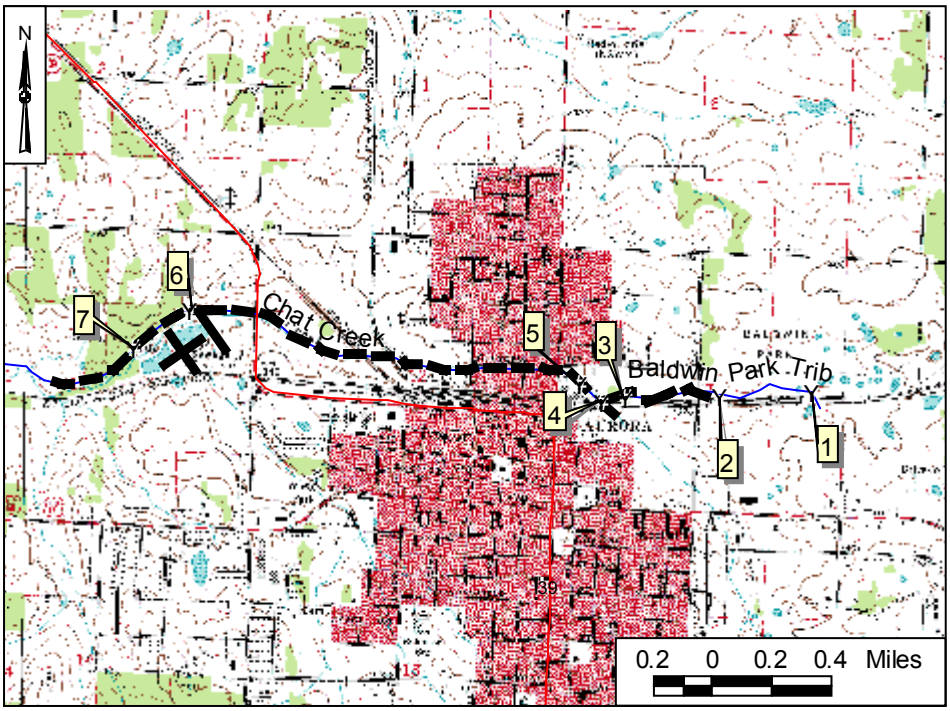
Past lead and zinc mining occurred in the vicinity of Aurora in the upper Chat Creek watershed. Chat Creek, also known as Douger Branch, has elevated levels of zinc in the vicinity of the town of Aurora. Because compounds of zinc are generally soluble in neutral and acidic solution, zinc is readily transported in most natural waters and is one of the most mobile of the heavy metals. Hardness, dissolved oxygen, temperature and synergistic (more than the sum of the individual components) effects with other compounds all affect the toxicity of zinc to aquatic life[1]. Zinc is an essential nutrient to aquatic and terrestrial organisms, but in excess can be highly toxic and has the tendency to bioaccumulate (build up in organisms) in the environment. A number of behavioral and physiological effects have been reported when test organisms have been exposed to increased zinc levels. Behavioral responses in fish include avoidance and changes in feeding rate and movement

[1] Upper Sacramento River TMDL for Metals, California Environmental Protection Agency, 9/25/01. www.swrcb.ca.gov/rwqcb5/TMDL/upperSacCdCuZn.html

patterns. Physiological changes in fish include increased ventilation rates, frequency of coughing and a decrease in oxygen utilization.[2]

Recent studies by the Department of Natural Resources have located the main source of the zinc, which appears to be an upwelling of water from flooded abandoned lead-zinc mines just east of town. The Department of Natural Resources is presently evaluating the area as a possible Superfund hazardous waste site. A map of the area and a graph summarizing the data may be found below.

Chat Creek in Lawrence County, Missouri, with Sampling Sites

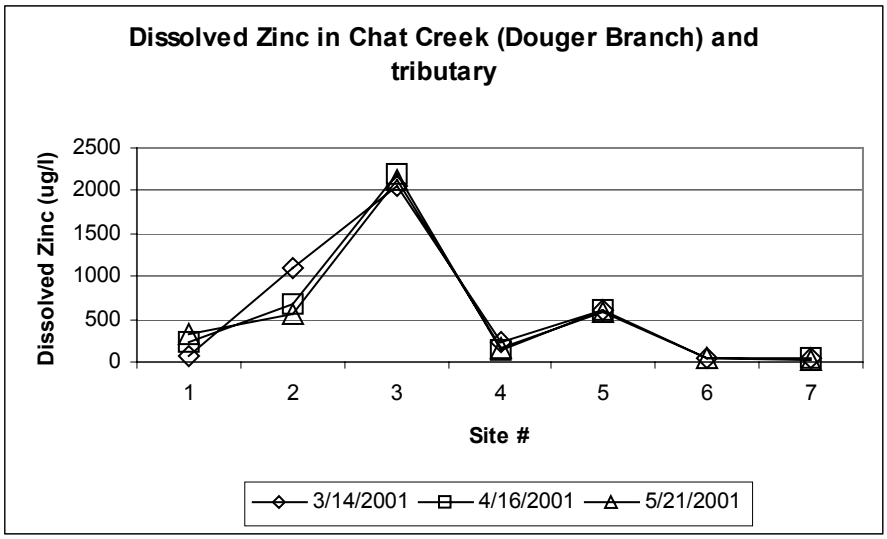


Impaired Segment → Direction of Flow

Site Index

1 – Baldwin Park Tributary to Douger Branch 0.76 mile above Hwy 39
2 – Baldwin Park Tributary to Douger Branch 0.6 mile above Hwy 39
3 – Baldwin Park Tributary to Douger Branch 0.3 mile above Hwy 39
4 – Douger Branch at railroad tracks just above Baldwin Park Tributary
5 – Douger Branch just below Baldwin Park Tributary
6 – Douger branch just above Aurora Wastewater Treatment Plant (WWTP)
7 – Douger Branch 0.05 mile below Aurora WWTP

[2] Red Clay Creek TMDL, Delaware Natural Resources and Environmental Control, 8/1/99. www.dnrec.state.de.us/DNREC2000/Library/Water/rcctmdl.pdf



Source: Missouri Department of Natural Resources

For more information call or write:

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